

Amendments to the Specification:

Please replace paragraph [2] on page 1 with the following amended paragraph:

As well known to those skilled in the art, the property of every substance is determined by the bonding of component atoms, in which the bonding is carried out by outer electrons bound to the atoms. Changing the bonding status of a substance with electron beams of a ~~sufficiently~~ sufficient energy level can obtain a property totally different from the previous one ~~can be realized~~.

Please replace paragraph [56] on page 7 with the following amended paragraph:

In the electron beam irradiator of the invention, the cathode 2 is provided longitudinally in a central portion of the vacuum chamber 1, in which one end of the cathode 2 is connected with the high voltage supply 5 by the first support 3 and supported in position thereby, whereas the other end of the cathode 2 is connected with the second vacuum flange 6 by the second support 4 and supported in position thereby. The one end of the cathode 2 is supported as the connector pin 52 of the high voltage supply 5 is inserted into the pin insert hole 31 of the cathode 2 through the first insulator 32 of the ~~firs~~ first support 3, and the other end of the cathode 2 is supported as the rear insert protrusion 43 of the cathode 2 is inserted into the insert groove 42 of the second insulator 41.